



NOTES

CESTODES (TAPEWORMS)

GENERALLY, WHAT ARE THEY?

PATHOLOGY & CAUSES

- Human gastrointestinal tract parasites; AKA tapeworms
 - Adult tapeworms live in intestines
 - Larvae live in different tissue (brain, liver, eye, etc.)
- Tripartite body
 - Head/scolex (contain suckers, hooks/attachment organs)
 - Thin neck
 - Trunk (made of numerous proglottids)
- Hermaphroditic
 - Each proglottid has male, female organs
- Transmission
 - Egg/larvae-contaminated water/food ingestion

RISK FACTORS

- Poor hygiene
- Low socioeconomic status
- Raw/undercooked fish/meat
- Livestock exposure
- Living/travelling in endemic areas

COMPLICATIONS

- Cysticercosis (*Taenia*)
- Cyst rupture
- Intestinal obstruction
- Malabsorption → vitamin B₁₂ deficiency → megaloblastic anemia

SIGNS & SYMPTOMS

- Tapeworm species-dependent
- Can be asymptomatic, abdominal pain, nausea/vomiting, weight loss

DIAGNOSIS

DIAGNOSTIC IMAGING

MRI, CT scan, ultrasound

- Cyst presence

LAB RESULTS

- Microscopy
 - Identify eggs/proglottids in stool
- Complete blood count (CBC), serology

TREATMENT

- Tapeworm species-dependent

MEDICATIONS

- Anthelmintics

VISIT...

LANZAROTE
Caliente.COM

DIPHYLLOBOOTHRIUM LATUM

osms.it/diphyllobothrium-latum

PATHOLOGY & CAUSES

- AKA fish tapeworm
- Longest human-infecting tapeworm (4–15m/13–49ft)
- Causes diphyllobothriasis in humans
- Proglottids
 - Width > length
- Competes for vitamin B₁₂ → vitamin B₁₂ deficiency

CAUSES

- Raw/undercooked fish → larvae ingestion

COMPLICATIONS

- Tapeworms → mechanical intestinal obstruction
- Malabsorption → weight loss
- Vitamin B₁₂ deficiency → megaloblastic anemia

SIGNS & SYMPTOMS

- Vitamin B₁₂ deficiency
 - *Impaired oxygen delivery*: fatigue, activity intolerance, pallor, compensatory mechanisms (↑ heart rate, bounding pulse)
 - *Neuronal demyelination*: numbness, tingling, weakness
- Weight loss
- Abdominal pain

DIAGNOSIS

LAB RESULTS

- Megaloblastic anemia; e.g. increased mean corpuscular volume (MCV)
- Microscopy
 - Identify eggs/proglottids in stool
- ↓ serum vitamin B₁₂

TREATMENT

MEDICATIONS

- Anthelmintics

ECHINOCOCCUS GRANULOSUS (HYDATID DISEASE)

osms.it/echinococcus-granulosus

PATHOLOGY & CAUSES

- Parasitic infection caused by *E. granulosus*
 - AKA echinococcosis
- Produce protoscoleces
 - Juvenile scolex invaginated in cysts
 - Tapeworm maturation in definitive host's intestine
- Humans (incidental hosts); herbivores (intermediate hosts); canids (definitive hosts)

CAUSES

- Viable parasite egg-containing food consumption

RISK FACTORS

- Parasite/egg-contaminated food/water ingestion
- Close contact with infected animals



Figure 61.2 The gross pathology of hydatid cysts excised from the lung.



Figure 61.1 A scolex of the organism *Echinococcus granulosus*, the causative agent of hydatid disease.

COMPLICATIONS

- Arise as cysts migrate, grow in size, rupture
 - **Liver**: eosinophilia, pruritus, jaundice, urticaria, liver abscess, **anaphylaxis**
 - **Peritoneal cavity**: peritonitis, pancreatitis
 - **Pleural space**: abscess formation → pneumothorax/pleural effusion
 - **Bronchial tree**: respiratory distress, hemoptysis
 - **Heart**: cardiomegaly/pericardial effusion
 - **Kidney**: glomerulonephritis
- Large cyst compression effect
 - **Heart**: **large cyst in liver** → compression of right heart
 - **Cerebral/spinal cord (CNS)**: neurological deficits
 - **Liver/biliary tree cysts**: obstructive jaundice/cholangitis; venous drainage obstruction → portal hypertension → Budd–Chiari syndrome (abdominal pain, ascites, hepatomegaly)

SIGNS & SYMPTOMS

- Initially asymptomatic
- Depend on affected organs
 - **Liver:** right upper quadrant pain, hepatomegaly, nausea, vomiting
 - **Lungs:** cough, chest pain, dyspnea, hemoptysis
- Other organs (rarely affected)
 - **Heart:** jugular venous distention, dyspnea
 - **Musculoskeletal:** diffuse pain, pathologic fractures
 - **Kidney:** hematuria, flank pain
 - **CNS:** headache, motor deficit, seizure, coma
- Puncture-aspiration-injection-reaspiration (PAIR)
 - Ultrasound/CT scan-guided cyst puncture
 - Aspirate cystic fluid
 - Inject scolicedal solution
 - Reaspirate cystic solution
 - Repeat procedure until aspirate clears
 - Fill cyst with isotonic saline

DIAGNOSIS

DIAGNOSTIC IMAGING

Ultrasound/MRI/CT scan

- Cyst presence

LAB RESULTS

- Enzyme-linked immunosorbent assay (ELISA)
 - Echinococcal antigen detection in cystic fluid
- Indirect hemagglutination
 - Echinococcal antigen detection
- Immunodiffusion/immunoelectrophoresis
 - Echinococcal-specific antibody detection
- Biopsy/cyst aspiration

TREATMENT

MEDICATIONS

- Albendazole/ mebendazole
 - Uncomplicated cases

SURGERY

- Complicated cases
 - Rupture, vital structure compression, cysts with diameter > 10cm/3.94in

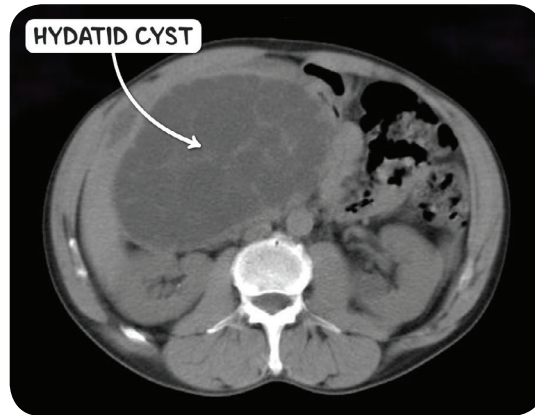


Figure 61.3 A CT scan of the abdomen in the axial plane demonstrating a large hepatic hydatid cyst. The numerous daughter cysts are faintly visible.

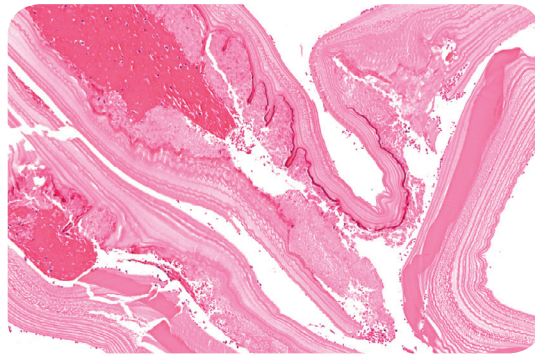


Figure 61.4 A histological section through a hydatid cyst wall showing a typical laminated structure.